

AMATEUR SATELLITE REPORT

AMSAT® NA Newsletter for the Amateur Radio Space Program



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AMSAT Annual Meeting and Space Symposium Held In Michigan

The AMSAT NA Annual Meeting and Space Symposium was held the weekend of November 7th and 8th at the Southfield Hilton Hotel in Southfield, Michigan just north of Detroit. Nearly 200 space enthusiasts attended the meeting which is the high point in the AMSAT NA annual calendar.

Highlights of the weekend included a fascinating keynote banquet talk and motion picture by Astronaut Dr. Tony England, WØORE, and awards to outstanding AMSAT individuals. Tony was among nearly two dozen presenters of papers on various topics of interest to satellite enthusiasts.

The 1988 Board of Directors election results were announced as follows:

Mr. Jan King, W3GEY, 908 votes (Re-elected)
Mr. John Browning, W6SP, 745 (Re-elected)
Mr. William Tynan, W3XO, 680 (Elected)
Dr. Robert McGwier, N4HY, 606 (Elected)
Dr. John Henry, VE2VQ, 578 (First Alternate)
Mr. Andy MacAllister, WA5ZIB, 450 (Second Alternate)
Dr. John Champa, K8OCL, 425.

There being 4 seats up for election, Mssrs King, Browning, Tynan and McGwier are elected. Mssrs Henry and MacAllister are elected First and Second Alternate Director, respectively. The elected Directors will serve two year terms of office.

Awards for meritorious achievement were presented to Doug Loughmiller, KO5I, Al Brinckerhoff, WB5PMR, Keith Pugh, W5IU and Jack Crabtree, AAØP for their outstanding Field Operations work. Tom Clark, W3WI, Bob McGwier, N4HY and Dick Jansson, WD4FAB, received achievement awards for their outstanding work in Engineering. Bob Diersing, N5AHD, received an award for his excellent work in publishing the AMSAT Technical Journal. (Keith Pugh accepted the award for Al Brinckerhoff and Andy MacAllister accepted on behalf of Bob Diersing.)

Many individuals won prizes at the banquet. Among the major prize winners were: Dr. Junior DeCastro, PY2BJO, won the ICOM 275A radio for having the highest score in the member recruitment contest. Junior brought in 51 new AMSAT members all from Brazil. Winner of the ICOM 475A Grand Banquet prize was Greg Barr of the National Space



One person who was especially delighted to have the 1987 AMSAT meeting in Michigan was Detroit resident Dick Cotton, W8DX. Dick is legend for having worked most people who he's heard on OSCAR. He's got 143 countries (claimed) on OSCAR and 141 confirmed.

Society. The winner of the drawing for the autotracking system prize raffle for member renewal was Fred Rollyson, WB6CNO, of Moorpark, California. Fred had renewed for 2 years and won an autotracking system worth over \$1,000 including computer, Encomm interface, Mirage/KLM antennas and Kenpro rotors.

The complete list of banquet prize winners appears in this ASR. Prize donors, in addition to ICOM, included Mirage/KLM, Encomm, Advanced Receiver Research, Henry Radio, Advanced Electronic Applications, Cushcraft and ARRL.

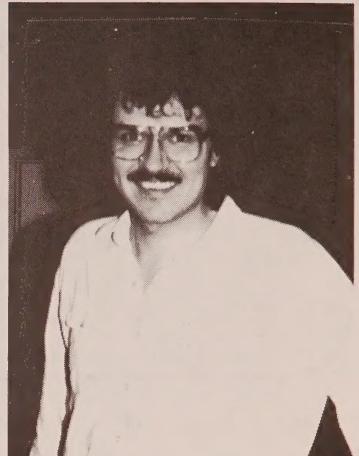
The Board of Directors met on November 7 and 8. Many major decisions were taken which will affect AMSAT significantly in both the short and long terms. These matters will be covered in ASR as soon as the meeting minutes are ready for publication. Here are some highlights.



Newly elected Director Bill Tynan, W3XO, also serves as Vice President of Manned Space Projects. Here Bill talks about a proposal by AMSAT and ARRL to include Amateur Radio on the Space Station.



AMSAT's QEX Associate Editor Ron Long, W8GUS, (left) and Board Chairman John Browning, W6SP, between technical sessions at the Space Symposium.



Regional Coordinator Andy Deskur, KA1M, in Southfield.

Officers elected included:

John Browning, W6SP, Chairman of the Board
Vern Riportella, WA2LQQ, President
John Champa, K8OCL, Executive Vice President
Jan King, W3GEY, Vice President, Engineering
Ralph Wallio, WØRPK, Vice President, Operations
Bill Tynan, W3XO, Vice President, Manned Space Projects
Doug Loughmiller, KO5I, Vice President, Field Operations
Art Feller, KB4ZJ, Treasurer
Martha Saragovitz, Secretary

All were incumbents except Doug Loughmiller, KO5I. Doug was formerly Vice President of Operations and returned to active status in Field Operations this year.

A major Bylaws review was accomplished by Ray Soifer, W2RS. The Board reviewed Ray's recommendations favorably and asked that his suggestions be fine tuned for final approval by the Board as soon as possible. The Board concluded a dues increase in 1988 would be necessary to offset increasing costs of member service and appointed a committee to recommend the new dues structure for Board approval. The Board felt it important member dues accurately reflect the costs of member service particularly as



AMSAT's Space Education Advisor Dick Ensign, N8IW, gave a paper on high school projects at the 5th Space Symposium.



Doug Loughmiller, KO5I, was elected Vice President of Field Operations at the AMSAT Board of Director's meeting Sunday, November 8. Here Doug addresses a meeting of Regional Coordinators from around the country.



Returning to the U.S. after more than a half-decade in Israel is Joe Kasser, G3ZCZ (left). Joe had been editor of AMSAT's quarterly newsletter which preceded both ASR and ORBIT as AMSAT's official publication. Seen with him here is Bob Anderson, W8KZM, Symposium organizer.

1987 AMSAT Annual Meeting Banquet Prize Winners List

Prize	Donor	Winner
GRAND PRIZE: ICOM 475A Xcvr	ICOM	Greg Barr, NSS
Landwehr mast mounted preamp	Henry Radio	Bill Overman, K4SNF
Cushcraft AOP-1 OSCAR package	Cushcraft	Dan Schultz, N8FGV
ARR In-Line 70cm GaAsFET Preamp	ARR	Dave Stevens, WB0P
Computer Patch CP-1	AEA	Ed Rodjowski, N8GZL
Computer Patch CP-1	AEA	Jeff Jones, KA8PGO
Computer Patch CP-1	AEA	Junior DeCastro, PY2BJO
ARRL Handbook	ARRL	Phil Karn, KA9Q
ARRL Handbook	ARRL	Charles Strong, W3CQB ARRL
Handbook	ARRL	Bill Overman, K4SNF
ARRL Handbook	ARRL	John Gayman, WA3WBU
ARRL Handbook	ARRL	Dennis Kay, VE3OEU
ARRL Handbook	ARRL	Doug Wilson, KA8IGS
ARRL Handbook	ARRL	John A. Brodberg
ARRL Operations Manual	ARRL	Myrnie Browning
ARRL Computer Conference Proc.	ARRL	Steve Smith, N8DEZ/6

Remaining prizes to be distributed to individual who left prior to their name being drawn. These individuals include: Dick Cotton, W8DX; Guy Wands, WB8UNO; Paul Columbo, KA8DYD; Fred Scheiter, K8IVC; Leo Voelke, W8HDH; Robert Menzies, VE3GKM; Barbara Czerny, KA8RHL and Jeff Martin.

regards overseas members. Progress on getting Phase 3C launched was reviewed. Best guess launch date now appears to be March 15, 1988. Fund raising efforts need to be emphasized the Board agreed. An AMSAT Launch Information Network Service (ALINS) will provide live coverage of the Phase 3C launch. Progress on Phase 4 was reviewed. A March 1988 design review milestone was

established. There was considerable discussion about the joint AMSAT-TAPR Digital Signal Processing (DSP) project. In a major move, the Board authorized \$50,000 be expended in 1988 for the development of advanced digital technology for a target of opportunity launch of a PACSAT packet radio satellite in the Amateur Satellite Service on very short notice. (See related story in this ASR).



Andy Bachler, N9AB, presented his paper on "Two-way Fast Scan TV Proposal for the Space Shuttle."



Greg Barr, Deputy Executive Director of the National Space Society spoke about a newly formed AMSAT/NSS Space Education Network. Greg was the lucky winner of the ICOM 475A 70 cm all mode transceiver, the Banquet Grand Prize.



Bill Brown, WB8ELK, explained his recent weather balloon-borne TV transmitter to the Space Symposium.



Junior DeCastro, PY2BJO, holds model of AO-10. Junior donated \$1,000 to the Phase 3C Insurance Campaign.

AMSAT Board Authorizes PACSAT Project

On November 8, the AMSAT Board of Directors learned from Vice President of Engineering Jan King, W3GEY, that it may be possible for AMSAT to develop and provide an Amateur Radio packet radio satellite much more quickly than previously thought. The Board responded by authorizing an extraordinary program to take advantage of any one of several "target of opportunity" launches that may present themselves within the next 24 months.

A packet radio satellite, generically called a PACSAT, has

been an objective for nearly a half decade since AMSAT and TAPR developed the concept around the time the TAPR TNC was being developed 5 years ago. Since then the PACSAT concept has been exploited in military, scientific and commercial payloads. Recently, VITA announced it had received a grant to develop and operate a PACSAT in the private sector, public service domain. It does not at this time appear the VITA/PACSAT will be in the Amateur Radio service according to reliable sources.

According to W3GEY, several fertile launch opportunities are now evident. These include opportunities within calendar 1988 and 1989 he said. The Board authorized the formation of a PACSAT Team and funded a virtual "crash program" at \$50,000 to take advantage of any feasible launch that may be compatible with the PACSAT system and mission designs. In allowing pursuit of the "target of opportunity" launch, the Board said, in effect, that AMSAT wants to develop a PACSAT on a priority basis for a short term project. According to Tom Clark, W3IWI, one of the original architects of the PACSAT concept, a major portion of the PACSAT design is already complete and prototype hardware construction will begin immediately.

An immediate need for support for this crash program is now evident. All packet radio enthusiasts will be welcome to use PACSAT when it is launched possibly within the next year. But attainment of this very ambitious schedule hinges on sufficient financial support up front. A special AMSAT/PACSAT Fund has been established to finance this important program. AMSAT, P.O. Box 27, Washington D.C. 20044.

Atlanta To Host 1988 AMSAT Annual Meeting and 6th Space Symposium

In its meeting recently in Southfield, Michigan, AMSAT's Board of Directors heard a proposal of its Southeastern



Bill Clapp of Weber State College, Ogden, Utah, talked about NUSAT-1 and NUSAT-2. Here he holds the "world's smallest satellite:" a golf ball with antenna!



Doug Loughmiller, KO5I, (left) discusses Field Operations with Regional Coordinator Byron Lindsey, W4BIW. Byron's proposal to hold the 1988 Annual Meeting and 6th Annual Space Symposium in Atlanta was accepted by the Board of Directors.



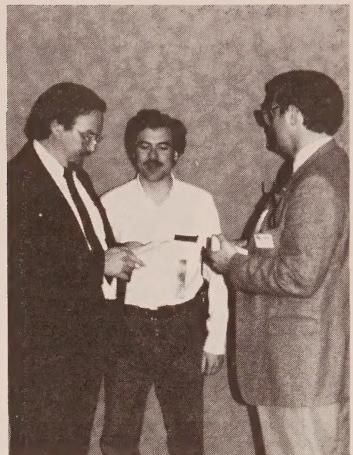
Paul Rinaldo, W4RI, discusses a point during a break in the Symposium action.



Doug Loughmiller, K05I, (left) accepts Field Operations award from President WA2LQQ.



Ray Soifer, W2RS, gave his paper "QRP EME" at the AMSAT Space Symposium.



Helping in the Space Symposium organization were (l-r): Larry Koziel, K8MU, Jay Schwartz, WB8SBI and John Champa, K8OCL. K8MU was chairperson.

Regional Coordinator Byron Lindsey, W4BIW, to hold the 1988 Annual Meeting in Atlanta. The Board voted favorably on the proposal. Thus, the 1988 Annual Meeting and the 6th Annual AMSAT Space Symposium will be held in Atlanta at a date to be determined shortly. Target date is around veteran's day, November 11, 1988.

Byron said he has the support of several of the Atlanta area radio clubs to host the AMSAT meeting in Atlanta. He recently organized the highly successful AMSAT Forum at the 1987 ARRL National Convention in Atlanta. At that convention W4BIW was awarded the prestigious Amateur Ambassador of the Year Award.

disruption especially to Mode B satellites like AO-10 and Phase 3C. Mode B uplinks are in the 435 to 436 MHz range.

The move by JARL staff was puzzling to many because JARL is both a signatory of the IARU Region 3 bandplan which recognizes the satellite sub-band and because JARL is thought to be a strong supporter of the Amateur Satellite Program.

The International Amateur Radio Union (IARU) Secretary Dave Sumner, K1ZZ, is looking into the situation at AMSAT's request. A progress report will be issued soon.

Phase 3C Launch Preparations Accelerate

The Phase 3C spacecraft will undergo an intensive series of tests in the second half of November. The tests are being performed in the facilities of AMSAT DL in Marburg and other facilities AMSAT DL has obtained in West Germany. The tests include the critical shake and vibration tests, the spin balance procedure and an additional thermal vacuum test. The tests are being performed now based on an estimated launch date of March 15 for the Ariane V-22 mission. On paper, V-22 remains scheduled for February 1988. In AMSAT-NA, AMSAT Launch Information Network Service (ALINS) plans are going ahead full speed under VP Operations Ralph Wallio, WØRPK.

JARL Bandplan Would Jeopardize 70cm Satellite Activity

A preliminary draft of a Japanese Amateur Radio League (JARL) 70 cm bandplan has raised the hackles of satellite operators in Japan and elsewhere. The plan would permit FM terrestrial operation in the 435 to 438 MHz range in Japan. This sub-band is widely recognized as a satellite-use only band. Use by terrestrial FMers could cause widespread



Bob McGwier, N4HY, (left) and Tom Clark, W3IWI, received awards for their pioneering work in Digital Signal Processing (DSP).



At the Space Symposium were Andy MacAllister, WA5ZIB (left), AMSAT Alternate Director and Editor of "OSCAR Notes" and Ross Forbes, WB6GFJ, Project OSCAR User Services Manager.



Craig Underwood, G1WTW, gave his paper "Classroom Applications of Satellites in the UK." Craig is affiliated with the University of Surrey's UoSAT program in England.



Keith Pugh, W5IV, (left) accepts Field Operation award from VP Doug Loughmiller, KO5I.

African Near-Disaster Underscores Packet Project Urgency

The potential value of Amateur Radio-derived communications technology in a desperate emergency situation has again been vividly demonstrated. This time the scene unfolded in the rural mountainous southern African Kingdom of Lesotho.

Recently Lesotho was struck by the worst snow and rain storms in living memory. Villages and farms in the rugged mountain areas were cut off from supplies and lost virtually all communication with the outside world.

Recognizing the potential severity of the disaster, the Lesotho government called on the South African Air Force to send helicopters to assess the situation. It was soon determined the government's worst fears had been realized. The population was found to be in truly desperate circumstances: no food and no power. They had been relegated to using paraffin for lighting and heating. The

livestock was dying for lack of feed.

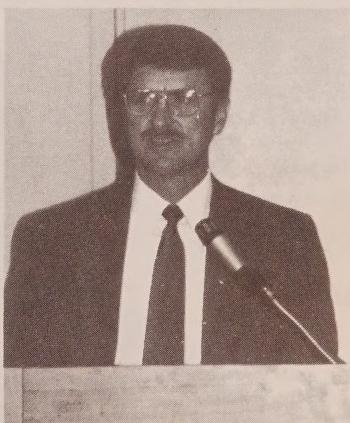
Shortly after the scope of situation had been determined, essential supplies were flown in and the situation was stabilized. A major disaster was thus averted by the quick response of the authorities. However, the suffering actually incurred by the extremely poor rural population could have been largely avoided through the use of a communications system now under study by a consortium of international communication and development experts.

The Lesotho Packet Radio project is one of the first programs to begin actually applying this Amateur Radio-derived technique to protracted, rural-emergency situations where other communications are non-existent. The objective of the pilot project is to establish an experimental Amateur Radio packet network on both vhf and hf as a demonstration of concept.

Based on that success, it should be possible to gain assistance from various governments to proliferate the system across broad geographical areas and across several



Mori Ohara, JK1VXJ, briefed the "FO-12 Mailbox System" at the Space Symposium.



Astronaut Dr. Tony England, W0ORE, was the featured banquet speaker and additionally gave a paper on ham radio and the space station as it relates to students and teachers.



Andy MacAllister, WA5ZIB, (left) accepts Publications award on behalf of AMSAT Technical Journal Editor (and fellow Texan) Bob Diersing, N5AHB. Bob couldn't be in Michigan to accept the award from WA2LQQ (who catches a few ZZZZZs here). (W0ORE photo)



K.O. Learner, K9PVW, spoke at a session on Space Education. K.O. is working with the NSS on a Space Education Network concept.



Doug Loughmiller, KO5I, (left) presents Field Operations award to Regional Coordinator Jack Crabtree, AA8P.



Jay Jellema, W8SWN, gave his paper, "An Introduction to Amateur Radio" at AMSAT's Symposium.

types of sociological problems beyond just emergency relief. Once the pilot project is in operation and has proved its worth, the network will be transferred to non-Amateur frequencies.

In Lesotho, for example, packet radio could assist farmers with information on agriculture, markets for their produce, weather information, etc. During adverse weather conditions, the network would serve as a back-up for established emergency communications. (Although some governments might have some problems with this type of experimental use of Amateur frequencies, interpretations vary widely. While some would rule out Amateur involvement in all cases, other governments may allow proofs of concept to transpire in an Amateur Radio context.)

The pilot project calls for the establishment of a number of packet stations in the network. The network will be linked to the ZS6SAT PBBS in Johannesburg. From there a gateway to the UoSAT OSCAR 11 DCE and FO12 will be provided. A potential linkup with the future VITA-PACSAT

is contemplated as well in a later version when the network is transitioned to non-Amateur frequencies for regular operational use.

The first steps in implementing the network are already being taken. The first digipeater in the link between Lesotho and Johannesburg will go into operation within the next few weeks. The second digipeater will most likely be installed before the end of the year. The UO-11 DCE gateway is under development and should be in operation by year's end.

The South African part of the project is being financed by SA AMSAT. A fund raising campaign is under way to obtain various system components. The Canadian International Development Research Council is considering financing the Lesotho portion of the network. Canadian George Hunt, operating in Lesotho as 7P8DL, is the catalyst for the project. He is receiving engineering and other support from the SA AMSAT organization under the leadership of ZS6AKV.



Phil Karn, KA9Q, explains the basis of his orbit determination work.



Jan King, W3GEY, gave a Phase 4 status report. Jan is AMSAT's VP of Engineering.



Junior DeCastro, PY2BJO, (left) President of BRAMSAT, accepts the Member Recruitment Drive Grand Prize from AMSAT-NA President Vern Riportella, WA2LQQ. Junior brought in 51 new AMSAT members and won the new ICOM 275A 2m transceiver as his prize.

FO-12 Schedule

Mode	From	(UTC)	To	(UTC)
JD	Dec01	03:31	02	06:42
JD	03	03:45	04	04:53
JD	05	03:58	06	05:07
JA	08	01:16	09	02:24
JA	10	01:30	11	02:38
JA	12	05:51	14	01:57
JA	15	03:06	16	06:19
JA	17	05:25	18	06:33
JD**	19	22:34	20	00:37
JD	20	04:44	21	05:52
JD	22	04:58	23	04:04
JD	24	01:06	25	06:19
JD	26	03:24	27	04:32
JD	28	03:38	29	02:43
JD	31	02:57	Jan01	04:04
JD	Jan02	03:11	03	02:17
JA	05	02:30	06	01:36

The transponders will be off at other times. The schedule may be changed at any time due to unexpected power situations.

**Note: On December 19 from 22:34 through 0:34 UTC, a special telemetry software package will be loaded to permit telemetry transmission every 2 seconds instead of every minute. No mailbox functions will be available during this

period but the digipeater will be operational. Reports of received telemetry will be appreciated. Please send them to JARL via the FO-12 mailbox.



Dick Jansson, WD4FAB, (left) and Ralph Wallio WØRPK, relax between Symposium sessions.

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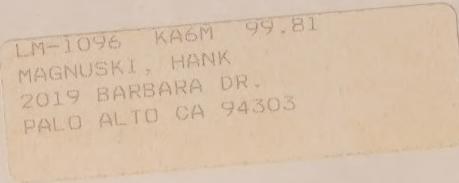
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Martha Saragovitz, AMSAT's Office Manager, at the Space Symposium registration desk in Southfield, Michigan, November 7.

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